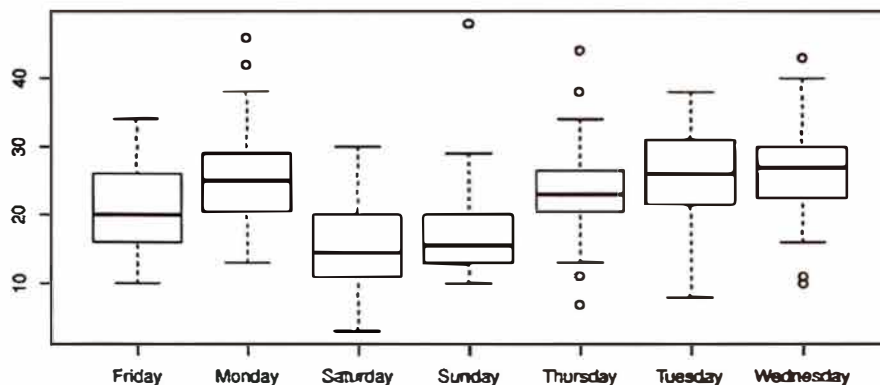1)

The above side-by-side frequency chart represents the amount of traffic accidents in California each day for a year, grouped by the day of the week.

   (a) Which day of the week has the highest median number of accidents; what is the approximate value on that given day?

   Wednesday

   (b) Which day of the week appears to be the safest to travel? Why do you think that, based on this data?

   Saturday because it has one of the lowest median, IQR, and range.

   (c) How many outliers, all together, are represented in this presentation?

   10 outliers

   (d) True/False/Can't be determined:
       1) There are always more accidents on Wednesdays than any other day of the week.   C

       2) Some days there are less than 10 accidents a day.   T

       3) There are days when there are 0 accidents.   F

       4) 50% of Saturdays have between 10 and 20 accidents.   T

       5) Most Tuesdays have less than 20 accidents.   F

       6) Of the 52 Friday's charted, exactly 1 of them had 20 accidents.   F

       7) Thursday has the smallest IQR   T

   (e) Tuesday's Q3 is closest to: 1) 10   2) 20   (3) 30)   4) 40

2) *Given the two way frequency chart below concerning the students' favorite subjects in high school and which grade they are in, answer the questions below:*

	Math	English	Science	Social Studies	Total
9th	560	232	105	20	917
10th	115	308	200	56	679
11th	165	105	68	225	563
12th	15	420	10	3	448
Total	855	1065	383	304	2607

(a) Fill in the empty cells.

(b) Approximately what percentage of students picked math as their favorite subject?

$855/2607 \approx 33\%$

(c) Given that a student is a freshman, what is the ratio of freshman that prefer English?

$232/917$

(d) Create a **ROW** CONDITIONAL RELATIVE FREQUENCY chart – round to two decimal places.

	Math	English	Science	Social Studies
9th	$\frac{560}{917} \approx 0.61$	$\frac{232}{917} \approx 0.25$	$\frac{105}{917} \approx 0.11$	$\frac{20}{917} \approx 0.02$
10th	$\frac{115}{679} \approx 0.17$	$\frac{308}{679} \approx 0.45$	$\frac{200}{679} \approx 0.29$	$\frac{56}{679} \approx 0.08$
11th	$\frac{165}{563} \approx 0.29$	$\frac{105}{563} \approx 0.19$	$\frac{68}{563} \approx 0.12$	$\frac{225}{563} \approx 0.40$
12th	$\frac{15}{448} \approx 0.03$	$\frac{420}{448} \approx 0.94$	$\frac{10}{448} \approx 0.02$	$\frac{3}{448} \approx 0.01$

(e) If you ask a random student about their favorite subject and they reply "math," which grade would you expect them to be in? Why?

9th grader because of the highest percentage (61%)

(f) If you asked 100 sophomores about their favorite subject, about how many of them would you expect to say "English"? a) 30   (b) 45   c) 55   d) 120

(g) What is the conditional relative frequency for the 12th graders who like Science? (Round to 2 decimal places.)

$\frac{10}{448} \approx 0.02$

(h) Use the data from the table to state whether or not there is an association between grade and favorite subject. Explain your thinking.

Yes, there appears to be an association between grade and favorite subject. There are big differences in the row conditional relative frequencies between grades and subjects (9th/math, 12th/English)

3)

Height of Soccer Players (in)
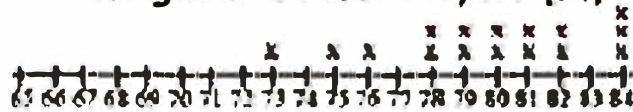
Height of Basketball Players (in)

(a) How many basketball players were surveyed?

16 players

(b) What are the mean and median heights for each sport?

Basketball : median = 80 , mean = 79.75

Soccer : median = 72 , mean = 72.06

(c) Calculate the IQR for the Height of the Soccer Players. Would a height of 65 be considered an outlier? Explain your answer.

$Q_1 = 70$

$Q_3 = 74$

IQR = 74 - 70
= 4

1.5 × 4 = 6
70 - 6 = 64
74 + 6 = 80

No, 65 is not an outlier. Only data that's lower than 64.

(d) Which sport has a larger standard deviation for heights? (You do not need to calculate the SD.)

Basketball (more spread out)

(e) If we surveyed two more soccer players and their heights were 66 inches and 82 inches, how would that change the median height of soccer players?

The median would not change.

(f) If every basketball player grows exactly 3 inches over the summer, how will that change the standard deviation?

The standard deviation would not change.

(g) If we survey one more basketball player and he's 60 inches, how will that affect the standard deviation?

The standard deviation would be bigger.

4) *The dot plots below show the number of pets each student had in Ms. Frizzle's class. The top part represents the girls in the class, the bottom represents the boys.*
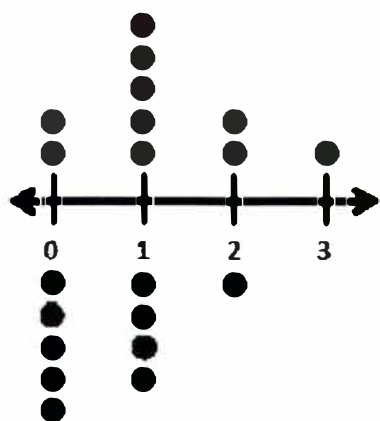
(a) How many girls are in the class? How many boys?

10 girls, 10 boys

(b) How many boys had 1 pet?

4 boys

(c) Is the boys' data symmetrical, skewed left, or skewed right?
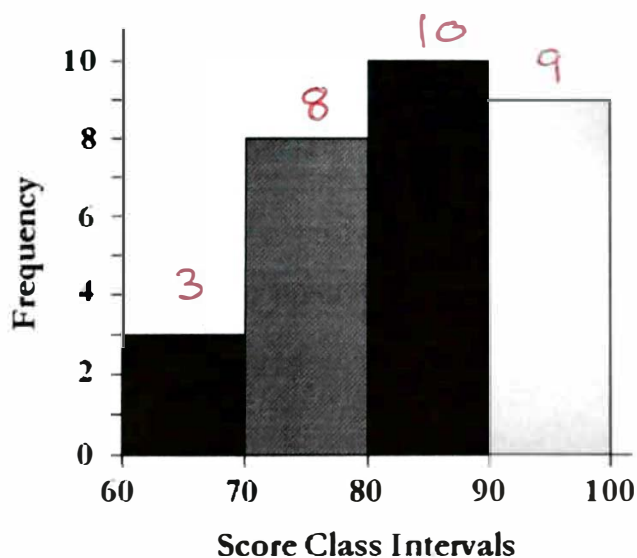
skewed right

(d) What is the median for the boys' data?

0.5

(e) Is the mean or median higher for the girls' data?

The mean is higher.

5) *The histogram below shows the scores (%) of Ms. Frizzle's class on a quiz. Use it to answer the following questions.*

(a) How many students earned between a 70-79% on the quiz?

8 students

(b) How many students took the quiz, total?

30 students

(c) Is this distribution best described as unimodal, bimodal or multi-modal?

unimodal.

(d) How many students earned below an 80% on the quiz?

11 students

(e) Can we tell what the highest score on the quiz was? If yes, what is it? If not, explain why not.

No, histogram does not show individual data

Draw a dot plot for each data set.

6)   Shoe Size

9	9	6	9	8	9	8	11
10	8	9	10	9	7	9	7
8							

Shoe Size

Draw a box-and-whisker plot for each data set.

7)   Mens Heights (Inches)

64	64	67	67	69	71	71
71	71	71	72	73	73	73
76	76	82				

median = 71

$Q_1 = 68$

$Q_3 = 73$

$IQR = 73 - 68 = 5$

men's heights (in)
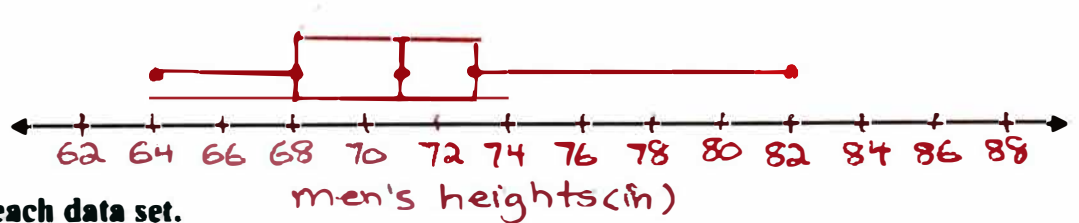
Draw a histogram for each data set.

8)   Monthly Revenue

17,700	18,520	22,410	24,980
27,320	28,940	30,130	33,130
33,180	37,160	39,360	41,640
44,950	45,870	51,200	63,970

Monthly Revenue ($)
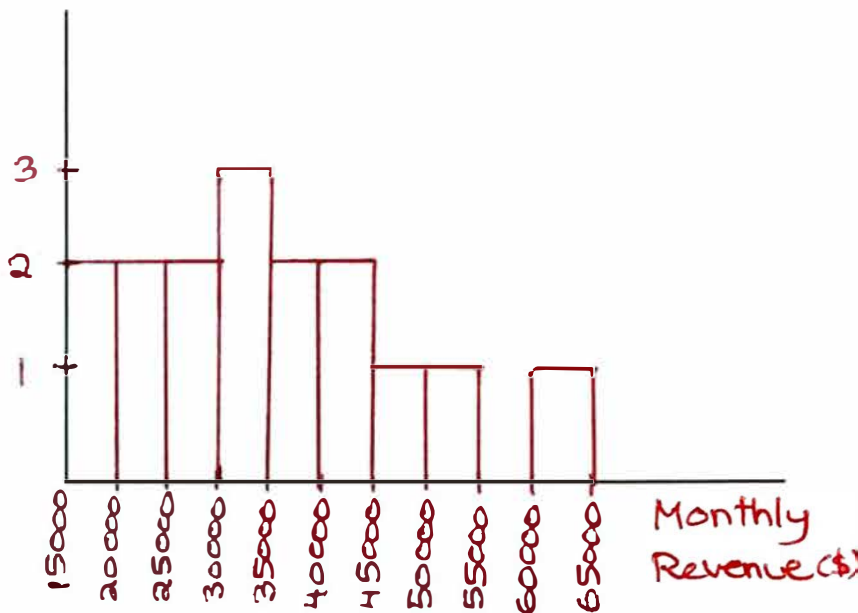
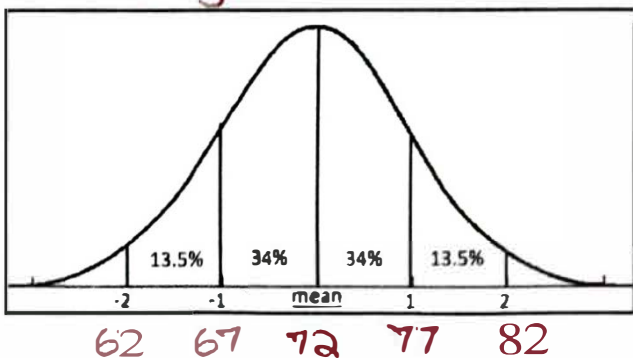**9) Describe the box plot in #7 using SOCS.**

S → symmetric, gap

O → $1.5 \times IQR = 1.5 \times 5 = 7.5$ → upperband $73 + 7.5 = 80.5$
     → 82 is an outlier

C → median at 71

S → Range: $82 - 64 = 18$ $IQR = 5$

10) 200 students took an algebra test and the scores were normally distributed. The mean was 72 with the standard deviation of 5. About how many students scored between 67 and 77?

13.5%   34%   34%   13.5%

-2   -1   mean   1   2

62   67   72   77   82

$$\frac{X}{200} = \frac{68}{100}$$

$100X = 13600$

$x = 136$ students.